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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,880	01/06/2006	Longxiang Bian	13836-00002-US	6060

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EXAMINER

ANDLER, MICHAEL S

ART UNIT	PAPER NUMBER
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2876

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/558,880

Applicant(s)

BIAN, LONGXIANG

Examiner

Michael Andler

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-7 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 30 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SF-188)
Paper No(s)/Mail Date 30 November 2005
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. Claims **1-7** are rejected under 35 U.S.C. 101 for containing nonfunctional descriptive material and nonstatutory computer-related subject matter.

Regarding claims **1-5**, to paraphrase, applicant claims a system including "symbols disposed sequentially on nodes arranged in the form of a matrix" where nodes are "cells" according to the special definition in the specification (See section 0028) and a cell is further understood to designate the intersection of a row and column in the matrix as shown in Figures 2a and 2b. Applicant further claims that the directional symbols can be control characters or information characters.

In the specification, applicant discloses the sequence but not the manner in which symbols are disposed on cells, nor does the applicant disclose the form or nature of the claimed matrix. When viewed within the plain and ordinary meaning of the terms, applicant is claiming a mathematical sequence arranged in the form of a matrix, which is a mathematical array of elements that are arranged in rows and columns, wherein the elements of the sequence are selected symbols or characters as designated in claim **3**.

Mere arrangements of data without any functional interrelationship are nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture, or composition of matter and therefore are not patentable. See MPEP 2106.01, Section II.

Regarding claims **1-5**, applicant claims the element of "directional symbols" which, when read in light of the specification, consist of "30 (individual) data bits" that clearly represent data structures (See specification, sections 0039 and 0040). The claim further recites that the symbols are "disposed on nodes arranged in the form of a matrix" which is not a structure that is recognizable as a computer-readable medium. Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 and MPEP 2106.01, Section I.

Regarding claims **6 and 7**, applicant claims a method for recognizing a system as in claim **1**, that includes the steps of "reading encoding information at said nodes within said matrix" and "extracting said directional symbols". In claim **1**, applicant does not specify a specific structure that is recognizable as a computer-readable medium, nor does applicant specify a specific structure for reading the information and extracting the symbols as recited in claim **6**. Thus the method of claims **6 and 7** are not tied to a particular machine or transform a particular item and therefore, are not patentable subject matter. See *In Re Bilski*, Appeal No. 2007-1130, (Fed. Cir. October 30, 2008).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 1, related to a system, and method claim 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Uhling (US 5,984,193).

Examiner note: The following definitions have been used in the rejections in order to identify the best prior art as it relates to the disclosure of the specification and are not necessarily representative of the common usage of the terms. Specific labels for symbols have only been used to deduce the functionality of the data bits as disclosed in the specification and will not be individually addressed in the claim rejections.

A "node" is an optical characteristic capable of storing information data bits.

"Directional symbols" are data bits that identify a particular direction in which the data is being read; a type of information relating to error-correcting, format, version, residual of the data block, and the like; or represent general information stored in the encoding region.

"Data symbols" are data bits that identify a particular direction in which the data is being read; or a type of information relating to error-correcting, format, version, residual of the data block, and the like.

"Error-correcting symbols" are data bits that represent general information stored in the encoding region.

A "symbol sequence" and a "BCH error correcting code sequence" are synonymous and are a set of data bits that represent encoded information in the encoding region.

Regarding claims **1 and 6**, Uhling discloses a two-dimensional bar code system recognizable in bidirection, including

an encoding region consisting of nodes arranged in a form of matrix (See Fig 3, item 36: *bi-directionally coded tiles* and Col 3, lines 22-26: "*a 10 by 10 matrix of square pixels...unprinted for a "0" value, or printed for a "1" value*" where a pixel is something capable of having data bits stored thereon and the matrix of pixels is understood to be the encoding region),

an encoding information sequence is disposed sequentially on said nodes of said matrix in one direction (See Fig 3, where the one direction is either left to right in rows or top to bottom in columns, depending on the type of sensor used) and in a reversible order (See for example, Fig 3, row 1, where the disposed information sequence is 1, 0, 1, 0, 1, 1, 0, 1, 1 when read from left to right, and 1, 1, 1, 0, 1, 1, 0, 1, 0, 1 when read from right to left and it is further understood that any linear sequence is in a "reversible order" to the reader when read in the opposite direction and that bi-directional capability for reading linear information in bar codes is well known in the art) and comprises

directional symbols (Col 3, lines 15-16: "*the tile code begins with an initial "1, 0" identifier, although other patterns may be used*"), wherein said directional symbols are arranged at specific locations having bilateral symmetry in said encoding information sequence (See Fig 3 and Col 3, lines 36-37, where tiles (1,1) and (1,2) correspond to

tiles (1,1) and (2,1) which are “*symmetrical about a diagonal axis 40*” and both contain an initial 1,0 pattern where “bilateral symmetry” is defined as “symmetry about a fixed line in a plane (line of symmetry)”).

said direction in which said encoding information sequence is disposed on said nodes of said matrix is identified by a combination of said specific locations and values of said directional symbols (See previous argument).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **2-4**, related to a system, and method claim **7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Uhling (US 5,984,193) in view of Ackley (US 5,619,027).

Regarding claims **2 and 7**, Uhling discloses all the limitations of claims **1 and 6**, respectively, and wherein said directional symbols comprise error-correcting symbols (See Fig 3 and Col 1, line 26, and 30-31: “*paper size, type, and orientation...existing media has been provided with bar coded identifying data for scanning by a printer*” which are types of general information that would be stored in the bar code).

Uhling suggests that optical sensors in the printer are "positioned to read conventional bar codes" and that "widths and spaces may be varied over a range of detectable values to encode more information, in the manner of a conventional bar code" (Col 3, lines 52-54).

Uhling does not specifically teach wherein said directional symbols comprise data symbols.

Ackley discloses wherein said directional symbols comprise data symbols (See Figs 1: *character value 23*; Fig 12, item ck: *check character* and Col 13, lines 9-11: "*the check character, produced by the above modulo 53 method, provides a character value of 23, which corresponds to the data character "N"*").

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to include a check character in a bar code symbol, in order provide a symbol character "whose value is used to perform a mathematical check that determines whether the symbol has been decoded correctly" (Ackley, Col 3, lines 25-29).

Regarding claim 3, Uhling as modified by Ackley, as applied to claim 2 above, discloses all the limitations of claim 2.

Uhling discloses wherein said directional symbols consist of symbols S_{11} , S_{10} , ..., S_1 , S_0 , STA , R_1 , R_2 , R_3 , R_4 , STO , S'_0 , S'_1 , ..., S'_{10} , S'_{11} , which comply with a relationship as follow:

a symbol sequence $\{STO, R_4, R_3, R_2, R_1, STA, S_0, S_1, \dots, S_{10}, S_{11}\}$ acts as one BCH (18, 6) error-correcting code sequence (See Fig 3, where the rows of data read from left to right are one set of data bits),

a symbol sequence $\{STA, R_1, R_2, R_3, R_4, STO, S'_0, S'_1, \dots, S'_{10}, S'_{11}\}$ acts as another BCH (18, 6) error-correcting code sequence (See Fig 3, where the columns of data read from top to bottom are a second set of data bits),

$S_0 \sim S_{11}$ and $S'_0 \sim S'_{11}$ are said error-correcting symbols belonging to said error-correcting code sequences (See argument in claim 2 regarding error-correcting symbols),

and wherein symbol STA functions as a data symbol that functions as a locating control character indicating said direction (Col 3, lines 15-16: *"the tile code begins with an initial "1, 0" identifier (Start character), although other patterns may be used"*).

Uhling also suggests that optical sensors in the printer are "positioned to read conventional bar codes" and that "widths and spaces may be varied over a range of detectable values to encode more information, in the manner of a conventional bar code" (Col 3, lines 52-54).

Uhling does not specifically teach wherein:

symbols STO and $R_1 \sim R_4$ are said data symbols,

symbol STO functions as locating control characters indicating said direction, and

$R_1 \sim R_4$ functions as normal information characters.

Ackley discloses wherein:

symbols STO and R₁~ R₄ are said data symbols (See Fig 4: *STOP* and Figs 5-8: *Functions 1-4* where the labels of F1, F2, F3 and F4 are equivalent to the labels R₁~ R₄),

symbol STO functions as a locating control character indicating said direction (See Fig 4 and Col 4, lines 35-36: "*that employs specific start/stop characters that allow for bidirectional scanning*" where it is well known in the art that bar codes that are read in a linear, sequential fashion as described by the applicant are easily readable bi-directionally by interpreting whether the start or stop character is scanned first),

R₁~ R₄ functions as normal information characters (See Col 5, lines 9-10: "*four function characters that have exceptional utility such as the function characters in the Code 128 symbology*" and Col 8, lines 54-55: "*provide special functions established for a given reader or industry*"),

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to include STOP and functional characters in a bar code symbol in order to provide characters "that allow for bidirectional scanning and focus determination" and to add "exceptional utility...such as Code 128" to the bar code symbology (See Ackley, Col 4, lines 35-36 and Col 5, lines 9-10).

Regarding claim 4, Uhling discloses wherein said directional symbols are arranged at said specific locations having bilateral symmetry in such a way that:

said directional symbols R₂, R₁, STA, S₀, S₁, ..., S₁₀, S₁₁ correspond to locations within left half part of said encoding information sequence according to a

distributional rule (See Fig 3, where the set of data to the left of *diagonal 40* is the left hand part which is distributed according to a rule of bilateral symmetry), and

said directional symbols R_3 , R_4 , STO , S'_0 , S'_1 , ..., S'_{10} , S'_{11} correspond to locations within right half part of said encoding information sequence according to said distributional rule (See Fig 3, where the set of data to the right of *diagonal 40* is the left hand part which is distributed according to a rule of bilateral symmetry).

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uhling (US 5,984,193), as modified by Ackley (US 5,619,027), as applied to claim 4 above, and further in view of admissions of prior art by Bian in the specification.

Regarding claim 5, Uhling as modified by Ackley, as applied to claim 4 above, discloses all the limitations of claim 4.

Uhling also suggests that optical sensors in the printer are "positioned to read conventional bar codes" and that "widths and spaces may be varied over a range of detectable values to encode more information, in the manner of a conventional bar code" (Col 3, lines 52-54).

Uhling, as modified by Ackley, does not specifically disclose wherein said distributional rule complies with an analog random discrete distribution.

Bian discloses wherein said distributional rule complies with an analog random discrete distribution (See section 0036, lines 15-18: "reversible sequences can be formed by a variety of distributional rules...and how to select a distributional rule or order is well known by the skilled in the art").

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use an analog random discrete distribution rule to arrange data at specific locations in a bilaterally symmetry bar code so the pattern "may be detected by either type of sensor, and regardless of orientation of the sheet" (See Uhling, Col 2, lines 52-54).

Conclusion

The following reference is relevant to the background of the prior art, specifically with regards to the bidirectional reading capability of common bar codes, but has not been cited:

A Brief Guide to Bar Code Printing by Datamax Corporation, retrieved from http://www.idspackaging.co.in/Common/Paper/Paper_355/Bar%20Code%20Printing.htm

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Andler whose telephone number is (571) 270-5385. The examiner can normally be reached on Monday-Friday 7:30 AM to 3:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Andler/
Examiner, Art Unit 2876

/Michael G Lee/
Supervisory Patent Examiner, Art Unit 2876